

Lat 39.63837 Lon -120.27910

# Forest Pest Management

## Pacific Southwest Region



File Code: 3420

Date: December 7, 2000

Subject: Follow-up evaluation of winter injury to seedlings in the Cottonwood burn area.  
(Report No. NE00-22)

To: District Ranger, Sierraville Ranger District, Tahoe National Forest

During the winter of 1999/2000, about 14,720 acres of natural pine regeneration within the Cottonwood burn suffered injury due to low temperatures (Figure 1.). The symptoms were typical of winter desiccation resulting from a combination of warm temperatures and/or winds occurring when the soil is frozen or at low temperatures. Snow usually helps to protect trees from this type of injury but may not have been present to a sufficient depth last year.

On 31 October 2000, I revisited the 1/10-th acre plots established to monitor the effect of foliage death on seedling growth and survival. Initial measurements by FPM personnel (See FPM Report No. NE00-17 dated 29 August 2000) showed foliage dieback had occurred on about 30% of seedlings. We also reported that most of the affected seedlings had active growth and that very few terminal buds had been killed. To date about 3% of the seedlings in the area have died.



**Figure 1. Winter injury to seedlings at the Cottonwood burn**

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**Figure 2. Change in seedling condition from 7 June to 4 August 2000.**

7 June 2000



Figure 2.  
Seedling with no affected foliage.



Figure 3.  
Seedling with less than 25% affected foliage



Figure 4.  
Seedling with greater than 25% affected foliage

4 August 2000



Figure 5.  
Seedling with no affected foliage.



Figure 6.  
Seedling with less than 25% affected foliage



Figure 7.  
Seedling with greater than 25% affected foliage

In order to better evaluate the effect of winter injury, nine individual trees were selected in each 1/10-th acre plot and photographed on 7 June 2000. During a subsequent visit on 4 August 2000 trees were re-photographed (figure 2.). On each visit a tally was taken of the number of dead trees. Some localized areas within the Cottonwood burn such as valley bottoms, adjacent slopes, and knoll tops have showed an increase in seedling mortality rates, up to 37 %. This increase in mortality is most likely the result of the aspect and the open exposure of these areas. Measurements on seedling height were taken at the initial evaluation and again during this visit. To summarize, there was a net loss of height growth of 78% in heavily affected trees (greater than 25% affected foliage) and a loss of 54% in lightly affected trees (less than 25 % affected foliage).

Based on these observations, further mortality of the remaining injured seedlings is expected to be minimal. Plots will be monitored once more in the spring of 2001 to evaluate any change in seedling condition. If you have any questions regarding this evaluation or request further assistance please contact me at 252-6610.



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Forest Pest Management